

Notice of Allowability

Application No.

10/759,983

Examiner

Douglas S. Lee

Applicant(s)

TANAKA, MASATO

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ The drawings filed on 16 January 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 1/16/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Examiner's Statement of Reasons for Allowance

1. Claims 1-8 are allowable over the prior of records.

1. The following is an Examiner's statement of reasons for the indication of allowable subject matter: Regarding claim 1, the allowability, at least in part, resides in a limit cycle autotuning method of calculating a control parameter by alternately performing operation of outputting a predetermined heat-side manipulated variable set point to a heating actuator and operation of outputting a predetermined cool-side manipulated variable set point to a cooling actuator in a heat/cool control apparatus which performs temperature control by performing feedback control computation with respect to a deviation between a set point and a controlled variable on the basis of the control parameter, and properly switching a heat mode of outputting a manipulated variable to the heating actuator and a cool mode of outputting a manipulated variable to a cooling actuator, fails to teach in part steps of the second limit cycle generation step of generating a second limit cycle by changing one of the heat-side manipulated variable set point and the cool-side manipulated variable set point on the basis of predetermined change instruction information for instructing which one of the heat-side manipulated variable set point and the cool-side manipulated variable set point is to be changed after the first limit cycle and a predetermined manipulated variable change ratio indicating a degree of the change; the second control response detection step of detecting a second control response corresponding to the second limit cycle; and the control parameter calculation step of calculating the control parameter for each of the heat mode and the cool mode on the basis of the detected first and second control responses. Regarding claim 2, the allowability, at least in part, resides in a limit

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cycle autotuning method of calculating a control parameter by alternately performing operation of outputting a predetermined heat-side manipulated variable set point to a heating actuator and operation of outputting a predetermined cool-side manipulated variable set point to a cooling actuator in a heat/cool control apparatus which performs temperature control by performing feedback control computation with respect to a deviation between a set point and a controlled variable on the basis of the control parameter, and properly switching a heat mode of outputting a manipulated variable to the heating actuator and a cool mode of outputting a manipulated variable to a cooling actuator, fails to teach in part steps of the manipulated variable change ratio calculation step of determining, on the basis of the first control response, change instruction information for instructing which one of the heat-side manipulated variable set point and the cool-side manipulated variable set point is to be changed after the first limit cycle and a manipulated variable change ratio indicating a degree of the change; the second limit cycle generation step of generating a second limit cycle by changing one of the heat-side manipulated variable set point and the cool-side manipulated variable set point on the basis of the change instruction information and the manipulated variable change ratio; the second control response detection step of detecting a second control response corresponding to the second limit cycle; and the control parameter calculation step of calculating the control parameter for each of the heat mode and the cool mode on the basis of the detected first and second control responses. Regarding claim 5, the allowability, at least in part, resides in a heat/cool control apparatus which has a limit cycle autotuning function of calculating a control parameter by alternately performing operation of outputting a predetermined heat-side manipulated variable set point to a heating actuator and operation of outputting a predetermined cool-side manipulated variable set

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point to a cooling actuator in a heat/cool control apparatus which performs temperature control by performing feedback control computation with respect to a deviation between a set point and a controlled variable on the basis of the control parameter, and properly switching a heat mode of outputting a manipulated variable to the heating actuator and a cool mode of outputting a manipulated variable to a cooling actuator, fails to teach in part steps of manipulated variable change ratio storage means for storing in advance change instruction information for instructing which one of the heat-side manipulated variable set point and the cool-side manipulated variable set point is to be changed during the autotuning, and a manipulated variable change ratio indicating a degree of the change; limit cycle generating means for generating a second limit cycle, during execution of the autotuning, by changing one of the heat-side manipulated variable set point and the cool-side manipulated variable set point on the basis of the change instruction information and the manipulated variable change ratio after generating a first limit cycle of alternately outputting the heat-side manipulated variable set point and the cool-side manipulated variable set point; control response detection means for detecting a first control response corresponding to the first limit cycle and a second control response corresponding to the second limit cycle; and control parameter calculation means for calculating the control parameter for each of the heat mode and the cool mode on the basis of the detected first and second control responses, and setting the calculated control parameters in said control computation means.

4. Claims 4-5 and 7-8 are allowed for the same reasons above.

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Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Douglas Lee, whose telephone number is (571) 272-3745. The examiner can normally be reached on Monday-Friday from 8:00AM- 4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Leo Picard*, can be reached on (571) 272-3749 or via e-mail addressed to [*leo.picard@uspto.gov*]. The fax number for this Group is (571) 273-8300

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [*doug.lee@uspto.gov*].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Douglas Lee

8/11/2005


ALBERT W. PALADINI
PRIMARY EXAMINER